

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number  
**WO 2005/046488 A3**

(51) International Patent Classification<sup>7</sup>: **A61F 2/24**

(21) International Application Number:  
PCT/US2004/037867

(22) International Filing Date:  
12 November 2004 (12.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/519,114 12 November 2003 (12.11.2003) US

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(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,  
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

Published:

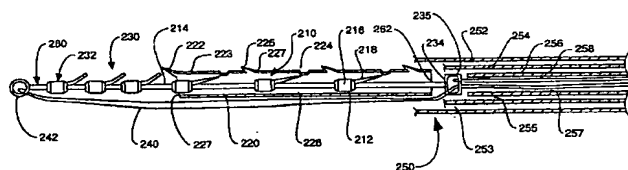
- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
24 November 2005

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: CARDIAC VALVE ANNULUS REDUCTION SYSTEM

200



(57) Abstract: A catheter-based, annulus reduction device and system (100, 200) for cardiac valve repair and method of using the same. The system is usable for treating mitral valve regurgitation and comprises a catheter (252), a reduction ring (220) carried within the catheter, the reduction ring including a plurality of exit ports (224) formed in a side wall of the reduction ring and filament (214) received in the reduction ring. The filament includes a plurality of radially extendible barbs (212) corresponding to the sidewall openings. The reduction ring carrying the filament is deployed adjacent a mitral valve annulus and the filament is translated relative to the reduction ring to deploy the barbs through the exit ports and into the annulus and to further translate the reduction ring with deployed barbs to reshape the annulus.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US2004/037867

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61F2/24

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61F A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EP0-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 01/00114 A (SAADAT, VAHID) 4 January 2001 (2001-01-04)  page 12, line 23 - page 13, line 13 figures 6A-6D -----	1,13 8,16

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "G" document member of the same patent family

Date of the actual completion of the international search  
  
10 May 2005

Date of mailing of the international search report  
  
28.09.2005

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2004/037867

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 12, 14, 33, 34  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☒ Claims Nos.: 12  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
see annex

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 12,14,33,34

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

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Continuation of Box II.2

Claims Nos.: 12

Claim 12 makes it difficult, if not impossible to determine the matter for which protection is sought. The reasons are the following:  
The only feature identified as "stop" in the description is the plurality of stops (237) that are positioned at either side of each key body (236) and are securely attached to the filament (214). These prevent the key bodies from having any movement along the filament. The term "stop" can nevertheless be associated with one of the described locking mechanisms. The one that more aproximates the claimed subject matter is related to the embodiment disclosed in figures 14-16 where the technical feature "stop" would correspond to the tab (1430) of alternative lock mechanism (1400). The tab is attached to the feature identified as annulus reduction ring's distal end (1410) and extending into its lumen. The tab is sized and shaped to prevent movement of the barbs the filament in one direction with respect to the annulus reduction ring. It is noted that even considering the embodiment that seems better aproximate the disclosed subject matter of claim 12, the discrepencies are so much that places an undue burden on others seeking to establish the extent of protection.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,8-10,13,15-32

A system for treating mitral valve regurgitation comprising the device for treating, a delivery catheter for delivering the device and a locking mechanism for locking the device in a reduced configuration. The device comprises a flexible tubular member including a through lumen and a plurality of sidewall openings and a barb assembly including a filament extending through the tubular member's through lumen and a plurality of barbs coupled to the filament and extending along the tubular member's plurality sidewalls

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2. claims: 1,2-4

A device for treating mitral regurgitation including a filament with the shape of a hollow tube

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3. claims: 1,5

A device for treating mitral valve regurgitation wherein the tubular member has a plurality of notches

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4. claims: 1,6,7

A device for treating mitral valve regurgitation including a flexible tubular member having a temporary barb disposed at its distal end and a plurality of anchors disposed around a perimeter of the flexible tubular member's deployed ring shape

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5. claims: 1,11

A device for treating mitral valve regurgitation including a reshaping cord being threaded through a cord ring disposed at the distal end of the device

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US2004/037867

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 0100114	A	04-01-2001	AU 5884400 A	31-01-2001
			EP 1198213 A1	24-04-2002
			JP 2003503103 T	28-01-2003
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